PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference P19448WO	**FOR FURTHER ACTION** See Form PCT/IPEA/416	
International application No. PCT/SE2004/001084	International filing date *(day/month/year)* 02-07-2004	Priority date *(day/month/year)* 19-02-2004
International Patent Classification (IPC) or national classification and IPC See Supplemental Box		
Applicant TELEFONAKTIEBOLAGET LM ERICSSON (Publ) et al		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
   a. ☒ *(sent to the applicant and to the International Bureau)* a total of 6 sheets, as follows:
      ☐ sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
      ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
   b. ☐ *(sent to the International Bureau only)* a total of (indicate type and number of electronic carrier(s))
      _____, containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
   - ☒ Box No. I Basis of the report
   - ☐ Box No. II Priority
   - ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - ☐ Box No. IV Lack of unity of invention
   - ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - ☐ Box No. VI Certain documents cited
   - ☐ Box No. VII Certain defects in the international application
   - ☐ Box No. VIII Certain observations on the international application

Date of submission of the demand	Date of completion of this report
19-12-2005	06-02-2006
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Supplemental Box

In case **the space in any of the preceding boxes is not sufficient.**
Continuation of: Cover sheet

INTERNATIONAL PATENT CLASSIFICATION (IPC):

H04L 29/06 (2006.01)
G06F 12/00 (2006.01)

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/SE2004/001084

Box No. I Basis of the report

1. With regard to the **language**, this report is based on:

☒ the international application in the language in which it was filed

☐ a translation of the international application into _____, which is the language of a translation furnished for the purposes of:

- ☐ international search (Rules 12.3(a) and 23.1(b))
- ☐ publication of the international application (Rule 12.4(a))
- ☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

☐ the international application as originally filed/furnished

☒ the description:

pages 1-23 as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☒ the claims:

pages _____ as originally filed/furnished
pages* _____ as amended (together with any statement) under Article 19
pages* 24-29 received by this Authority on 19-12-2005
pages* _____ received by this Authority on _____

☒ the drawings:

pages 1-8 as originally filed/furnished
pages* _____ received by this Authority on _____
pages* _____ received by this Authority on _____

☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing *(specify)*: _____
- ☐ any table(s) related to the sequence listing *(specify)*: _____

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing *(specify)*: _____
- ☐ any table(s) related to the sequence listing *(specify)*: _____

* *If item 4 applies, some or all of those sheets may be marked "superseded."*

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.
PCT/SE2004/001084

Box No. V **Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. Statement

Novelty (N)	Claims	1-26	YES
	Claims	---	NO
Inventive step (IS)	Claims	1-26	YES
	Claims	---	NO
Industrial applicability (IA)	Claims	1-26	YES
	Claims	---	NO

2. Citations and explanations (Rule 70.7)

Documents cited in the International Search Report:

D1. Hannu, H. et al: "Signaling Compression (SigComp) - Extended Operations." January 2003. Network Working Group, Request for Comments: 3321.
D2. US 20030212855 A1
D3. Price, R et al: "Signalling Compression (SigComp)". January 2003. Network Working Group, Request for Comments: 3320.

The cited documents represent the general state of the art. The invention defined in claims 1-26 is not disclosed by any of these documents.
The cited prior art does not give any indication that would lead a person skilled in the art to the claimed method of managing a state memory. Therefore, the claimed invention is not obvious to a person skilled in the art.
Accordingly, the invention defined in claims 1-26 is novel and is considered to involve an inventive step. The invention is industrially applicable.

PCT / SE 2004 / 0 0 1 0 8 4
19 -12- 2005

CLAIMS

1. A method of managing a state memory (160) adapted for storing state information applicable in a message communication between communications units (100-1, 100-2, 100-3, 100-4; 200) in a communications system (1), **characterized by**:

- defining at least two message classes of the messages communicated between said communications units (100-1, 100-2, 100-3, 100-4, 200); and
- dividing said state memory (160) into at least two memory portions (160-1, 160-2), each memory portion (160-1, 160-2) being assigned for storing state information associated with a specific message class.
- and in that said state memory (160) is arranged in a first communication unit (100-1) and is allocated for storing state information used in message communication with a second communications unit (100-2, 100-3, 100-4; 200).
- and in that said second communications unit (100-2, 100-3, 100-4; 200) requesting said first communications unit (100-1) to allocate state memory space utilized for storing said state information used in said message communication with said second communications unit (100-2, 100-3, 100-4; 200).

2. The method according to the claims 1, **characterized in that** said defining step comprises defining said at least two message classes based on at least one of:

- a priority type of said communications messages;
- an application protocol used when generating said communications messages; and
- a session type associated with communications messages.

3. The method according to any of the claims 1 to 2, **characterized in that** said dividing step comprises allocating an equal memory size to said at least two memory portions (160-1, 160-2).

4. The method according to any of the claims 1 to 3, **characterized in that** said dividing step comprises allocating a first memory size to a first memory portion (160-1) and a second different memory size to a second memory portion (160-2) based on a first message class associated with said first memory portion (160-1) and a second message class associated with said second memory portion (160-2).

5. The method according to any of the claims 1 to4, **characterized by**:

- determining a message class of a communications message; and
- storing state information generated based on said communications message in a memory portion (160-1, 160-2) associated with said determined message class.

6. The method according to claim 5, **characterized in that** said message class determining step comprises determining said message class based on data found in said communications message.

7. The method according to claim 6, **characterized by** determining whether said state information is to be stored in said memory portion (160-1, 160-2).

8. The method according to claim 7, **characterized in that** said step of determining whether said state information is to be stored comprises retrieving storage priority information from a look-up list (135) comprising storage command information for said message classes.

9. The method according to claim 8, **characterized in that** said step of determining whether said state information is to be stored comprises:

- investigating whether similar state information is already stored in said memory portion (160-1, 160-2); and
- storing said state information if no similar state information is already stored in said memory portion (160-1, 160-2).

PCT / SE 2004 / 0 0 1 0 8 4
19 -12- 2005

10. The method according to claim 9, **characterized in that** said step of determining whether said state information is to be stored comprises:

- compressing said communications message;
- calculating a compression factor for said communications message; and
- determining whether said state information is to be stored in said memory portion (160-1, 160-2) based on said compression factor.

11. A unit (130) for managing a state memory (160) adapted for storing state information applicable in a message communication between communications units (100; 200) in a communications system (1), **characterized by**:

- means (132) for defining at least two message classes of the messages communicated between said communications units (100; 200); and
- means (134) for dividing said state memory (160) into at least two memory portions (160-1, 160-2), each memory portion (160-1, 160-2) being assigned for storing state information associated with a specific message class;and
- in that said defining means (132) is configured for defining said at least two message classes based on at least one of:
- a priority type of said communications messages;
- an application protocol used when generating said communications messages; and
- a session type associated with communications messages.

12. A communications unit (100) adapted for message communication with at least one external communications unit (200) in a communications system (1), said communications unit (100) comprising:

- a state memory (160) adapted for storing state information applicable in said message communication; and
- a state memory managing unit (130), **characterized in that** said state memory managing unit (130) comprises:

- means (132) for defining at least two message classes of the messages communicated between said communications unit (100) and said at least one external communications unit (200); and
- means (134) for dividing said state memory (160) into at least two memory portions (160-1, 160-2), each memory portion (160-1, 160-2) being assigned for storing state information associated with a specific message class; and
- in that said defining means (132) is configured for defining said at least two message classes based on at least one of:
  - a priority type of said communications messages;
  - an application protocol used when generating said communications messages; and
  - a session type associated with communications messages.

13. The unit according to claim 11 or 12, **characterized in that** said dividing means (134) is configured for dividing said state memory (160) into at least two memory portions (160-1, 160-2) based on said message class definition from said defining means (132).

14. The unit according to claim 11, **characterized in that** said managing unit (130) and said state memory (160) are arranged in a first communication unit (100) and said state memory (160) is allocated for storing state information used in message communication with a second communications unit (200).

15. The unit according to claim 12, **characterized in that** said state memory (160) is allocated for storing state information used in message communication with a specific external communications unit (200).

16. The unit according to any of the claims 11 or 12, **characterized in that** said state information is used during compression and/or decompression of said communications messages.

17. The unit according to any of the claims 11 or 12, **characterized by**:

- a compressor (170); and
- a decompressor (180), wherein said state information is used by at least one of said compressor (180) and said decompressor (190).

18. The unit according to any of the claims 11 to 17, **characterized in that** said defining means (132) is configured for defining said at least two message classes based on at least one of:

- a priority type of said communications messages;
- an application protocol used when generating said communications messages; and
- a session type associated with communications messages.

19. The unit according to any of the claims 11 to 18, **characterized in that** said dividing means (134) is configured for allocating an equal memory size to said at least two memory portions (160-1, 160-2).

20. The unit according to any of the claims 11 to 18, **characterized in that** said dividing means (134) is configured for allocating a first memory size to a first memory portion (160-1) and a second different memory size to a second memory portion (160-2).

21. The unit according to any of the claims 11 to 20, **characterized by**:

- means (136) for determining a message class of a communications message; and
- means (138) for storing state information generated based on said communications message in a memory portion (160-1, 160-2) associated with said determined message class.

22. The unit according to claim 21, **characterized in that** said determining means (136) is configured for determining said message class based on data found in said communications message.

23. The unit according to claim 21 or 22, **characterized by** means (136) for determining whether said state information is to be stored in said memory portion.

24. The unit according to claim 23, **characterized in that** said determining means (136) is configured for retrieving storage priority information from an associated look-up list (135) comprising storage command information for said message classes and for generating a storing command based on said storage priority information, said storing means (138) being responsive to said storing command.

25. The unit according to claim 23, **characterized in that** said determining means (136) is configured for investigating whether similar state information is already stored in said memory portion (160-1, 160-2) and for generating a storing command if no similar state information is already stored in said memory portion, said storing means (138) being responsive to said storing command.

26. The unit according to claim 23, **characterized in that** said determining means (136) is configured for receiving a compression factor obtained during compressing said communications message and for generating a storing command based on said compression factor, said storing means (138) being responsive to said storing command.
